

COCOMOII & COCOTS Application

User Manual

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Introduction

Constructive Cost Estimation Model (COCOMO) had been introduced by Dr. Barry Boehm [Software Engineering Economics, 1981] as an objective cost model for planing and executing software project. Walker Royce had given COCOMO a definition as a well-defined, open “engineering” basis for reasoning about the cost and schedule implications of a software solution, and was a minor breakthrough in the software industry. COCOMO rapidly became the most popular software cost model. Then, it became the COCOMOII, which incorporates several field-tested improvement to both broaden its applicability and improve its estimating and accuracy for modern software development approaches

Currently, a new generation of software processes and products is changing the way organizations develop software. Commercial off-the-shelf (COTS) approach has also become one of the new evolutionary, risk driven, and collaborative software processes. Then, it became the integration of constructive commercial off-the-shelf (COCOTS) approach to COCOMOII approach.

The current version of COCOMOII application supports only COCOMOII calculation, which is the estimation of cost, effort, and schedule of the new project. When the COCOTS theory has been introduced, it has brought the new idea of using the pre-existing software that is self-contained off-the-shelf components. It will take advantage of existing, market proven, vendor-supported products, and also reduce overall system development costs.

Hence, COCOMOII and COCOTS application had been developed to estimate cost, schedule, and effort to support both new project components (COCOMOII), and COTS components. It combines all cost, schedule, and effort, required to complete the project based on both models. This application is a part of directed research I worked with Chris Abts and Dr. Barry Boehm, Center of Software Engineering, University of Southern California (USC), 2000.

However, this application can also support either COCOMOII or COCOTS calculations separately. The result of COCOMOII estimation when planning a new software development activity will be the same as USC’s COCOMOII application. The result of COCOTS calibration will provide the best way to construct a new system basing on the three determinants of feasibility--technical, economic, and strategic constraints.

According to the current state of COCOTS Model study, the first version of COCOMOII and COCOTS application has been introduced to both collect data for research and also to estimate cost and schedule for software projects. Hence, it was developed using spreadsheet. All the features and functions in this application will be suitable for all types of users, novice, intermittent, and experts. It will be the first application help users in exploring the idea of applying COCOMOII and COCOTS theory in their projects.

Model Overview

[Software Cost Estimation with COCOMOII, 2000] COCOMOII is an objective cost model for planning and executing software projects. It is an important ingredient for managing software projects or software lines of business. A cost model provides a framework for communicating business decisions among the stakeholders of a software effort. COCOMOII supports contract negotiations, process improvement analyses, tool purchases, architecture changes, component make/buy tradeoffs, and several other return-on-investment decisions with a credible basis of estimate a model to help you reason about the cost and schedule implications of software decisions you may need to make.

Unlike the initial COCOMO 81 situation in the late 1970s, in which there was a single, preferred software life-cycle model (the waterfall model), current and future software projects will be tailoring their particular process drivers. These process drivers include COTS or reusable software availability, degree of understanding of architectures and requirements; market window or other schedule constraints; and required reliability for an example of such tailoring guidelines.

Chris Abts said in the same book that COCOTS is an amalgam of four related sub models, each addressing individually what we have identified as the four primary sources of COTS software integration costs. (This is another key point. COCOTS at the stage of development being describe here in deals only with initial integration efforts. The long-term operation and maintenance effort is to be models in the future release of COCOTS

Initial integration costs are attributed to the effort needed to perform (1) candidate COTS component assessment, (2) COTS component tailoring, (3) the development and testing of any integration or “glue” code needed to plug COTS components into a larger system, and (4) increased system level programming due to volatility in incorporated COTS components.

Assessment is the process by which COTS components are selected for use in the larger system being developed. Tailoring refers to those activities that would have to be performed to prepare a particular COTS program for use, regardless of the system into which it is being incorporated, or even if operating as a standalone item. These are things such an initializing parameter values, specifying I/O screens or report formats, setting up security protocols, etc. Glue code development and testing refers to the new code external to the COTS components itself that must be written in order to plug the component into the larger system. This code by nature is unique to the particular context in which the COTS components is being used, and must not be confused with tailoring activity as defined above. Volatility in the context refers to the frequency with which new versions or updates of the COTS software being used in a larger system are released by the vendors over the course of the system’s development and subsequent deployment.

It should also be noted, however, that while the Assessment sub model lends itself easily to use very early in the project planning stages, the tailoring, glue code, and volatility sub models by the very nature of the costs they are trying to address and more problematic if used before the specific COTS products that will actually be integrated into a new system have

been identified. The reason is that the costs covered by these models are extremely dependent on the unique characteristics of any given set of COTS products and their vendors.

Application Overview

COCOMOII and COCOTS application composes of these following set;

P0. Start Page

Contain all links to all sub models in COCOMOII and COCOTS application.

P1. Overall Project:

Contain all information about project characteristics, which will be used to calibrate all information in both COCOMOII and COCOTS models.

It composes of these following pages.

- *P1.1 Project Level Information*
- *P1.2 COCOMOII Project Scale Factor*
- *P1.3 COCOTS Project Scale Factor*
- *P1.4 Schedule Compression*

P2. COCOMOII

Contain all COCOMOII factors' sheets, which required user to input information for calibrating output COCOMOII value. It calculates project cost and schedule for COCOMOII data as same as USC's COCOMOII model does.

It composed of these following pages.

- *P2.1 COCOMOII Input*
- *P2.2 COCOMOII Output*

P3. COCOTS Sheet

Contain all COCOTS classes' sheets, which required user to input information for calibrating all COCOTS components.

It composed of these following pages.

- *P3.1 COCOTS Assessment*
- *P3.2 COCOTS Tailoring* [Adapted from Jason K.Wong Version1.00]
- *P3.3 COCOTS Glue Code Information* [Adapted from Jason K.Wong Version1.00]
- *P3.4 COCOTS Glue Code*
- *P3.5 COCOTS System Volatility*

P4. Combined Schedule sheet

Contain all information about project schedule, which will estimate project's schedule from COCOMOII & COCOTS

P5. Master parameter

Contain parameter value, which will be used in all sheets.

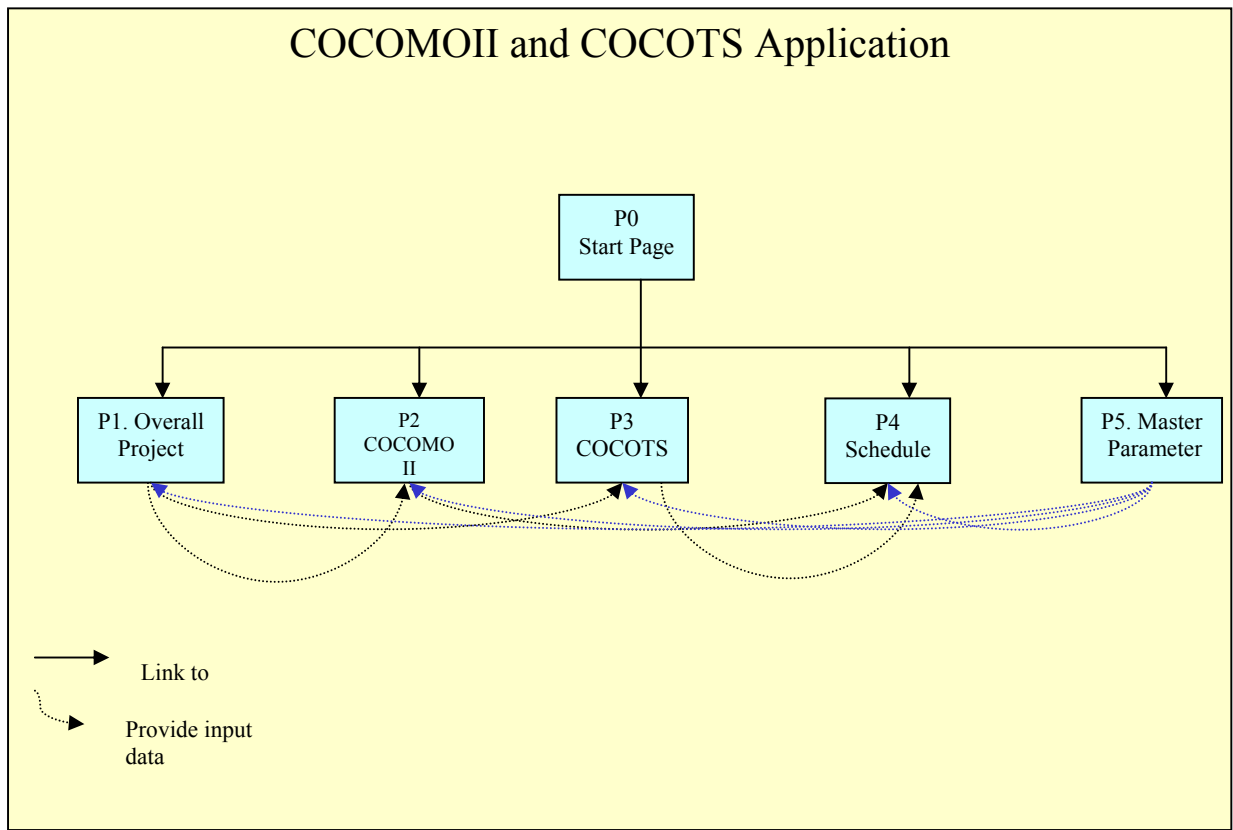


Figure 1. Application Overview

Who is our user?

The COCOMOII and COCOTS is built for project's estimation so that our user are persons, team, company or other relevant stakeholders that would like to estimate their project by using our application. According to the diversity of user, COCOMOII & COCOTS application is built in the user-friendly style to support all types of users.

Understanding the user

According to the diversity of users, the following knowledge may be required for using this application. This application has to support from novice users to expert users. Some may be people from technology side and some may come from business side. However, when both sides come to work on this application, they should have the common knowledge that can help them use this application effectively.

1.1 Basic Project Knowledge

The application requires users to know about project's characteristics. They have to be able to calibrate level of each project characteristics. They should be able to estimate the overall project's line of code, time and required working-persons.

They should be able to estimate project's schedule

In case of using COCOMOII Model, they should understand all this following project factors: project factors, platform factors, personal factors.

In case of using COCOTS model, they have to be able to classify project's Class. They should be able to assess all characteristics of each COTS's class. After that, they have to be able to tailor all those classes which will lead to work on glue code and system volatility.

In summary, the users should understand all projects' characteristic before they start using this application.

1.2 Basic Technical Knowledge

The software is a stand-alone software system intended for a single user. It has been developed on Microsoft Excel spreadsheet version. Hence, it is user-friendly application attempting to interface well with user needs. Both Novice and Expert users can work with this application as well.

Begin using the application

System Requirements

Before using the application, you required to meet these following requirements.

Hardware requirements

- PC- recommend Pentium I 100 MHz up
- 4.3 GB Hard Disk (or the available disk space should be around 1 GB)
- 32 MB RAM

Software requirements

- Windows 95, 98, NT
- Microsoft Excel (**Enabled Macro Required**)

Initialize the application

The Application required user to enable Macro operation.

To open Application file:

- Open Microsoft Excel
- Choose File from Location
- Click Enable Macro

Understand the Technical Standard

Standard	Description
Windows-Based application	All interface in windows-based style
User friendly	Using Visual Basic features for activate/hide all sheets to be easily for user
Radio Button group	For one selection from choices
Check Box	For more than one selection from choices
Standard Color	Use only major colors: white, blue, grey, black, yellow
White Blank	Input that user has to fill in
Grey Fill	Information link from other page
Yellow Fill and red font	Output from calculation
Purple fill	Overridable Field
Font	Arial
Comment	Put in comment box. It will show up the red dot at the corner of box. When user makes a mouse over, It will pop-up comment.
Field	Only blank field that allow users to fill in

P0. Start Page

Description

This page is the main page linked to other sheets. It will be open first.

Features

Section 1: *Project header*

Section 2: *Menu Selection*

- Display/Hide Overall Project sheets
- Display/Hide COCOMO II sheets
- Display/Hide COCOTS sheets
- Display/Hide Schedule sheets
- Display/Hide Master Parameter sheet

Instructions

Fill in the project information section. Then, project information will appear in other sheets. This page can link to the other sheets by click on the select button. After finished using other sheets, you can click hide button to hide that sheet.

Step	Step description	System response/ Notes
I	Click Display Button	The application will pop up the selected sheet
II	Click Hide Button	The application will hide up the selected sheet

Application Interface



Project Information			
Project Title :	<input type="text" value="Test"/>	Project ID No.	<input type="text" value="1"/>
Date Prepared:	<input type="text" value="20-Nov-00"/>	Rev No.	<input type="text" value="0"/>
Originators	<input type="text" value="May"/>		
Please Select			
Overall Project			
<input type="button" value="DISPLAY OVERALL PROJECT SHEETS"/>		<input type="button" value="HIDE OVERALL PROJECT SHEETS"/>	
COCOMO II Effort Modeling			
<input type="button" value="DISPLAY COCOMO II SHEETS"/>		<input type="button" value="HIDE COCOMO II SHEETS"/>	
COCOTS Effort Modeling			
<input type="button" value="DISPLAY COCOTS SHEETS"/>		<input type="button" value="HIDE COCOTS SHEETS"/>	
Combined Schedule			
<input type="button" value="DISPLAY SCHEDULE SHEET"/>		<input type="button" value="HIDE SCHEDULE SHEET"/>	
Master Parameters			
*** FOR ADVANCED USERS ONLY ***			
To change driver values for various sub-models.			
<input type="button" value="DISPLAY MASTER PARAMETER TABLES"/>		<input type="button" value="HIDE MASTER PARAMETER TABLES"/>	

P.1 Overall Project

Description

This Group composes of 4 main pages. All pages will appear after clicking on display overall project in P.0

P1.1 Project Level Info Sheet

P1.2 COCOMOII Project Scale Factor Sheet

P1.3 COCOTS Project Scale Factor Sheet

P1.4 Schedule Compression Sheet

P.1.1 Project Level Information

Description

This page is for input project level information. User must input all project characteristics in blank fields.

Features

Section 1: Project header

- Display Project Information header

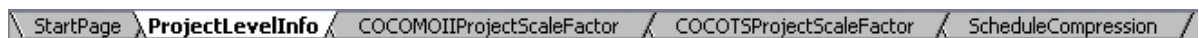
Section 2: Project Level Information Input form

- Display Input fields/selections for project level information

Instructions

Step	Step description	System response/ Notes
I	Input in blank field	Keep information in database

Application Interface



Project Level Information															
Project Title : <input style="width: 90%;" type="text" value="Test"/>	Project ID No. <input style="width: 90%;" type="text" value="1"/>														
Date Prepared: <input style="width: 90%;" type="text" value="20-Nov-00"/>	Rev No. <input style="width: 90%;" type="text" value="0"/>														
Originators <input style="width: 90%;" type="text" value="May"/>															
Project Domain															
Core System Functionality <ul style="list-style-type: none"> <input type="radio"/> Operational, Mission Critical <input type="radio"/> Operational, Non-Mission Critical <input type="radio"/> Support 															
Communications, Navigation and Surveillance <ul style="list-style-type: none"> <input type="radio"/> Operational, Mission Critical <input type="radio"/> Operational, Non-Mission Critical <input type="radio"/> Support 															
Administrative <ul style="list-style-type: none"> <input type="radio"/> Operational, Mission Critical <input type="radio"/> Operational, Non-Mission Critical <input checked="" type="radio"/> Support 															
Other (describe) <ul style="list-style-type: none"> <input type="radio"/> <input style="width: 90%;" type="text"/> 															
Where does COTS assessment occur in life cycle? <input style="width: 90%;" type="text"/>															
Delivery Scheduling (circle one) <ul style="list-style-type: none"> <input type="radio"/> Delivery to one location, no on-going maintenance <input checked="" type="radio"/> Delivery to one location, maintenance on-going <input type="radio"/> Delivery to multiple location, no on-going maintenance <input type="radio"/> Delivery to multiple location, maintenance on-going 															
Schedule Duration (calendar months)	<input style="width: 90%;" type="text"/>														
Project Total Effort (person-months)	<input style="width: 90%;" type="text"/>														
Standard Person-month	<input style="width: 90%;" type="text"/> (hrs/person-month)														
Project Total Delivered Source Code	<input style="width: 90%;" type="text"/> SLOC														
SLOC Count Type <ul style="list-style-type: none"> <input checked="" type="radio"/> Logical <input type="radio"/> Physical (semicolons) <input type="radio"/> Physical (carriage return) <input type="radio"/> Non-commented/Non-blank <input type="radio"/> Others 															
Programming Languages	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #D3D3D3;"> <th style="width: 80%;">Language</th> <th style="width: 20%;">% of Total SLOC</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Language	% of Total SLOC												
Language	% of Total SLOC														
Total System Function Point <input style="width: 90%;" type="text"/>															
System Architecture <ul style="list-style-type: none"> <input type="radio"/> Pipe & Filter <input type="radio"/> Multithreads <input checked="" type="radio"/> Distributed <input type="radio"/> Backboard/Single Layer or general repository <input type="radio"/> Transaction Database Centric <input type="radio"/> Real Time <input type="radio"/> Main/Subroutine <input type="radio"/> Closed Loop Feedback Control <input type="radio"/> Layers <input type="radio"/> Others 															
System Architecting Process (Describe) <input style="width: 90%; height: 40px;" type="text"/>															

P1.2 COCOMOII Project Scale Factors Sheet

Description

This page is for Project Scale Factors.

Features

Section 1: Project Header

- Display Project Information header

Section 2 – 6: Input Sections for COCOMOII

Section 2: Precedentedness (PREC)

T1.2.1. PREC Table with 4 sub tables

- Display Input PREC sub tables
- Display Output PREC table calibrated from PREC sub tables

Section 3: Development Flexibility (FLEX)

T1.2.2. FLEX Table with 3 sub tables

- Display Input FLEX sub tables
- Display Output FLEX table calibrated from FLEX sub tables

Section 4: Architecture/Risk Resolution (RESL)

T1.2.3. RESL Table with 7 sub tables

- Display Input RESL sub tables
- Display Output RESL table calibrated from RESL sub tables

Section 5: Team Cohesion (TEAM)

T1.2.4. TEAM Table with 4 sub tables

- Display Input TEAM sub tables
- Display Output TEAM table calibrated from TEAM sub tables

Section 6: Process Maturity (PMAT)

T1.2.5. Return out put in Scale Factor value

- Display Input PMAT sub tables
- Display Output PMAT table calibrated from PMAT sub tables

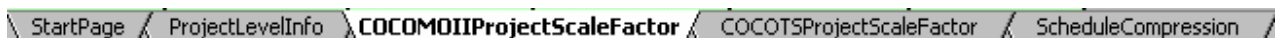
Instructions

Select your project characteristics in the sub-tables in each section; it will appear result for main table. You can change value or re-select value in main input section.

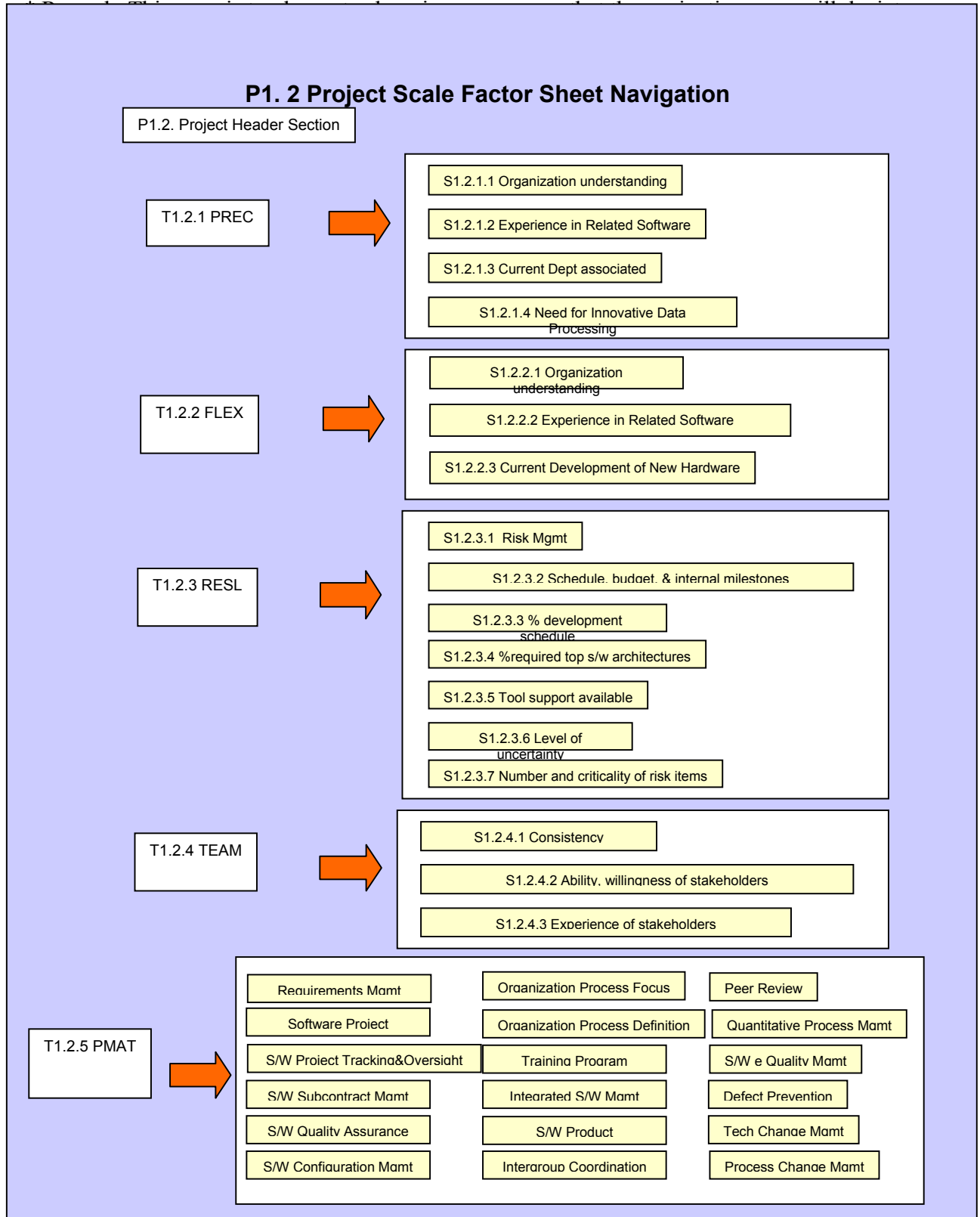
To select all field, put “X” in the desired blank-fled.

Step	Step description	System response/ Notes
I	Input PREC sub tables	Calibrate PREC value to PREC table
II	Input FLEX sub tables	Calibrate FLEX value to FLEX table
III	Input RESL sub tables	Calibrate RESL value to RESL table
IV	Input TEAM sub tables	Calibrate TEAM value to TEAM table
V	Input PMAT sub tables	Calibrate PMAT value to PMAT table

Application Interface P1.2



P1.2 Page Navigation



Section 1: Project Header

C O C O M O I I			
Project Title :	<input type="text" value="Test"/>	Project ID No.	<input type="text" value="1"/>
Date Prepared:	<input type="text" value="4-Mar-00"/>	Rev No.	<input type="text" value="0"/>
Originators	<input type="text" value="May"/>		

Section 2: Precedentedness (PREC)

Show PREC value in T1.2.1 PREC Table after input all sub tables

Instructions

Step	Step description	System response/ Notes
I	User Go To T.1.2.1 PREC Table	
II	Scroll Right to sub table	
III	Enter "X" in selected rank for S.1.2.1.1	Show value of selected field in correspondent point
IV	Enter "X" in selected rank for S.1.2.1.2	Show value of selected field in correspondent point
V	Enter "X" in selected rank for S.1.2.1.3	Show value of selected field in correspondent point
VI	Enter "X" in selected rank for S.1.2.1.4	Show value of selected field in correspondent point
VII	Scroll Back to Table S.1.2.1.1	Show "Total Point" of all selected fields
VIII	Scroll Back to Table T.1.2.1	Show the selected Value "x" correspondent to total Point Score
IX		Show value of automatic selected field in Output Box
X	[Option] Change "x" in Table T.1.2.1	Show value of selected field in correspondent point

T1.2.1. PREC Table

Scale Driver Description

Please fill in the 4 tables to the right. The Total Point Score is automatically selected.

PREC - Precedentedness					
Very Low	Low	Nominal	High	Very High	Extra High
Point total is between 4 and 7.33	Point total is between 7.3 and 10.66	Point total is between 11 and 13.99	Point total is between 14 and 17.32	Point total is between 17 and 20.65	Point total is between 21 and 24
<i>Thoroughly unprecedented</i>	<i>Largely unprecedented</i>	<i>Somewhat unprecedented</i>	<i>Generally Familiar</i>	<i>Largely Familiar</i>	<i>Thoroughly familiar</i>
6.20	4.96	3.72	2.48	1.24	0.00
	x				

Rationale for rating:

EXPLANATION

It the product is similar to several that have been developed before the precedentedness is high.

PREC

4.96

S1.2.1.1 Table

S1.2.1.2 Table

Features to evaluate PREC

Organizational understanding of product objectives					
Very Low	Low	Nominal	High	Very High	Extra High
General		Considerable	Considerable		Thorough
1.00		3.00	4.00		6.00
		x			

Experience in working with related sw systems					
Very Low	Low	Nominal	High	Very High	Extra High
Moderate		Considerable	Considerable		Extensive
1.00		3.00	4.00		6.00
		x			

Corresponding Points = 0.00

Total Point Score = 9.00

Corresponding Points = 3.00

S1.2.1.3 Table

S1.2.1.4 Table

Current dept of associated new hw and operational procedures					
Very Low	Low	Nominal	High	Very High	Extra High
Extensive		Moderate	Moderate		Some
1.00		3.00	4.00		6.00
		x			

Corresponding Points = 3.00

Need for innovative data processing architecture, algorithms					
Very Low	Low	Nominal	High	Very High	Extra High
Considerable		Some	Some		Minimal
1.00		3.00	4.00		6.00
		x			

Corresponding Points = 3.00

Section 3: Development Flexibility (FLEX)

Show FLEX value in S T 1.2.2 FLEX Table after input all sub tables

Step	Step description	System response/ Notes
I	User Go To T.1.2.2 FLEX Table	
II	Scroll Right to sub table	
III	Enter “X” in selected rank for S.1.2.2.1	Show value of selected field in correspondent point
IV	Enter “X” in selected rank for S.1.2.2.2	Show value of selected field in correspondent point
V	Enter “X” in selected rank for S.1.2.2.3	Show value of selected field in correspondent point
VI	Scroll Back to Table S.1.2.2.1	Show “Total Point” of all selected fields
VII	Scroll Back to Table T.1.2.2	Show the selected Value “x” correspondent to Total Point Score
VIII		Show value of automatic selected field in Output Box
IX	[Option] Change “x” in Table T.1.2.2	Show value of selected field in correspondent point

T1.2.2 FLEX Table

Please fill in the 3 tables to the right. The Total Point Score is automatically selected.

FLEX - Development Flexibility					
Very Low	Low	Nominal	High	Very High	Extra High
Point total is between 3 and 4	Point total is between 5 and 7	Point total is between 8 and 10	Point total is between 11 and 13	Point total is between 14 and 16	Point total is between 17 and 18
Rigorous	Occasional relaxation	Some relaxation	General conformity	Some conformity	General Goals
5.07	4.05	3.04	2.03	1.01	0.00
		X			

Rationale for rating:

EXPLANATION

This cost driver captures the amount of constraints the product has to meet. The more flexible the requirements, schedules, interfaces, etc., the higher the rating.

FLEX → **3.04**

Feature

Very Lo

1.00

Correspon

Total P

S1.2.2.1 Table

Features to evaluate FLEX

Organizational understanding of product objectives					
Very Low	Low	Nominal	High	Very High	Extra High
Full		Considerable	Considerable		Asaic
1.00		3.00	4.00		6.00
		x			

Corresponding Points = **3.00**

Total Point Score = **9.00**

S1.2.2.2 Table

Experience in working with related sw systems					
Very Low	Low	Nominal	High	Very High	Extra High
Full		Considerable	Considerable		Asaic
1.00		3.00	4.00		6.00
		x			

Corresponding Points = **3.00**

S1.2.2.3 Table

Current dev of associated new hw and operational procedures					
Very Low	Low	Nominal	High	Very High	Extra High
High		Moderate	Moderate		Low
1.00		3.00	4.00		6.00
		x			

Corresponding Points = **3.00**

Section 4: Architecture/Risk Resolution (RESL)

Show RESL value in T1.2.3 RESL Table after input all sub tables

Step	Step description	System response/ Notes
I	User Go To S1.2.3 RESL Table	
II	Scroll Right to sub table	
III	Enter "X" in selected rank for S.1.2.3.1	Show value of selected field in correspondent point
IV	Enter "X" in selected rank for S.1.2.3.2	Show value of selected field in correspondent point
V	Enter "X" in selected rank for S.1.2.3.3	Show value of selected field in correspondent point
VI	Enter "X" in selected rank for S.1.2.3.4	Show value of selected field in correspondent point
VII	Enter "X" in selected rank for S.1.2.3.5	Show value of selected field in correspondent point
VIII	Enter "X" in selected rank for S.1.2.3.6	Show value of selected field in correspondent point
IX	Enter "X" in selected rank for S.1.2.3.7	Show value of selected field in correspondent point
X	Scroll Back to Table S.1.2.3.1	Show "Total Point" of all selected fields
XI	Scroll Back to Table T.1.2.3	Show the selected Value "x" correspondent to Total Point Score
XII		Show value of automatic selected field in Output Box
XIII	[Option] Change "x" in Table T.1.2.3	Show value of selected field in correspondent point

T1.2.3 RESL Table

Please fill in the 7 tables to the right. The Total Point Score is automatically calculated.

RESL - Architecture/Risk Resolution					
Very Low	Low	Nominal	High	Very High	Extra High
Point total is between 7 and 12	Point total is between 13 and 18	Point total is between 19 and 24	Point total is between 25 and 30	Point total is between 31 and 36	Point total is between 37 and 42
<i>Rigorous</i>	<i>Occasional relaxation</i>	<i>Some relaxation</i>	<i>General conformity</i>	<i>Some conformity</i>	<i>General Goals</i>
7.07	5.65	4.24	2.83	1.41	0.00
	x				

Rationale for rating:

This cost driver captures the thoroughness of definition and freedom from risk of the software architecture used for the product.

EXPLANATION

RESL

5.65

S1.2.3.1 Table

Features to evaluate RESL

Risk management Plan identifies all critical risk items establishes milestones for resolving them by PDR					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Some	Generally	Mostly	Fully
		?			
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = **3.00**

Total Point Score = **18.00**

S1.2.3.2 Table

Schedule, budget, & internal milestones through PDR compatible with Risk Mgmt Plan					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Some	Generally	Mostly	Fully
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = **3.00**

S1.2.3.3. Table

Features to evaluate RESL

Risk management Plan identifies all critical risk items establishes milestones for resolving them by PDR					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Some	Generally	Mostly	Fully
		?			
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = **3.00**

Total Point Score = **18.00**

S1.2.3.4 Table

Schedule, budget, & internal milestones through PDR compatible with Risk Mgmt Plan					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Some	Generally	Mostly	Fully
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = **3.00**

S1.2.3.5 Table

Tool support available for resolving risk items, developing and verifying architectural specs					
Very Low	Low	Nominal	High	Very High	Extra High
20%	40%	60%	80%	100%	120%
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S1.2.3.6 Table

Level of uncertainty in Key architecture drivers: mission, user interface, COTS, hw, technology, performance					
Very Low	Low	Nominal	High	Very High	Extra High
Extreame	Significant	Considerable	Some	Little	Very little
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S1.2.3.7 Table

Number and criticality of risk items					
Very Low	Low	Nominal	High	Very High	Extra High
> 10	5-10	2-4	1	>5	<5
Critical	Critical	Critical	Critical	Non-Critical	Non-Critical
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

Section 5: Team Cohesion (TEAM)

Show TEAM value in T1.2.4 TEAM Table after input all sub-tables

Step	Step description	System response/ Notes
I	User Go To T1.2.4 TEAM Table	
II	Scroll Right to sub table	
III	Enter "X" in selected rank for S1.2.4.1	Show value of selected field in correspondent point
IV	Enter "X" in selected rank for S1.2.4.2	Show value of selected field in correspondent point
V	Enter "X" in selected rank for S1.2.4.3	Show value of selected field in correspondent point
VI	Scroll Back to Table S1.2.4.1	Show "Total Point" of all selected fields
VII	Scroll Back to Table T1.2.4	Show the selected Value "x" correspondent to Total Point Score
VIII		Show value of automatic selected field in Output Box
IX	[Option] Change "x" in Table T1.2.4	Show value of selected field in correspondent point

T1.2.4. TEAM Table

Please fill in the 4 tables to the right. The Total Point Score is automatically selected.

TEAM --Team Cohesion					
Very Low	Low	Nominal	High	Very High	Extra High
Point total is between 4 and 7.33	Point total is between 7.3 and 10.66	Point total is between 11 and 13.99	Point total is between 14 and 17.32	Point total is between 17 and 20.65	Point total is between 21 and 24
Thoroughly unprecedented	Largely unprecedented	Somewhat unprecedented	Generally Familiar	Largely Familiar	Thoroughly familiar
5.48	4.38	3.29	2.19	1.10	0.00
		x			

Rationale for rating:

EXPLANATION

The team Cohesion cost driver accounts for the sources of project turbulence and extra effort due to the difficulties in synchronizing the project's stakeholders: users, customers, developers, maintainers,

TEAM →

3.29

Features C

Very Low

1.00

Correspondi

Total Po

S1.2.4.1 Table

Features to evaluate TEAM

Consistency of stakeholder objectives and cultures					
Very Low	Low	Nominal	High	Very High	Extra High
Little	Some	Basic	Considerably	Strong	Fully
1.00	2.00	3.00	4.00	5.00	6.00
			x		

Corresponding Points = 4.00

Total Point Score = 13.00

S1.2.4.2 Table

Ability, willingness of stakeholders to accommodate other					
Very Low	Low	Nominal	High	Very High	Extra High
Little	Some	Basic	Considerably	Strong	Fully
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S1.2.4.3 Table

Experience of stakeholders in operating as a team					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Little	Basic	Considerable	Extensive
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S1.2.4.4 Table

Stakeholder teambuilding to achieve shared vision and					
Very Low	Low	Nominal	High	Very High	Extra High
None	Little	Little	Basic	Considerable	Extensive
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

Section 6: Process Maturity (PMAT)

PMAT value in T1.2.5 PMAT Table after input all sub tables

Step	Step description	System response/ Notes
I	User Go To T1.2.5 PMAT Table	
II	Scroll Right to sub table	
III	Enter "X" in selected rank for S1.2.5.1	Show value of selected field in correspondent point
IV	Scroll Back to Table S1.2.5.1	Show "Total Point" of all selected fields
V	Scroll Back to Table T1.2.5	Show the selected Value "x" correspondent to Total Point Score
VI		Show value of automatic selected field in Output Box
VII	[Option] Change "x" in Table T1.2.5	Show value of selected field in correspondent point

T1.2.5 Table

Please fill in the table to the right. The Total Point Score is automatically calculated.

PMAT - Process Maturity					
Very Low	Low	Nominal	High	Very High	Extra High
SW-CMM	SW-CMM	SW-CMM	SW-CMM	SW-CMM	SW-CMM
Level 1 Lower	Level 1 Upper	Level 2	Level 3	Level 4	Level 5
7.80	6.24	4.28	3.12	1.56	0.00
				x	

Rationale for rating:

PMAT

1.56

PMAT captures the institutionalized process maturity level of the organizing building the software for which an estimate is being made.

S1.2.5.1 Table

PMAT Evaluation								
Key Process Area	Almost 1	Very Often 0.75	About Half 0.5	Some 0.25	Rarely If 0	Doesn't 1	Don't 0	
Requirements Management	x							1
Software Project Planning	x							1
Software Project Tracking and Control	x							1
Software Subcontract Management	x							1
Software Quality Assurance	x							1
Software Configuration Management	x							1
Organization Process Focus	x							1
Organization Process Definition	x							1
Training Program	x							1
Integrated Software Management	x							1
Software Product Engineering	x							1
Intergroup Coordination	x							1
Peer Review	x							1
Quantitative Process Management	x							1
Software Quality Management	x							1
Defect Prevention	x							1
Technology Change Management	x							1
Process Change Management	x							1

Output of Scale Factor

ΣSF (Summation of Scale Factor) =	18.50
------------------------------------------	--------------

P1.3 COCOTS Project Scale Factors Sheet

Description

This sheet is the scale factor for COCOTS value

Features

Section 1: Project Header

- Display Project Information header

Section 2: Glue Code Project Effort Multiplier Attributes

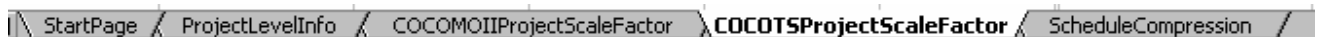
- Display Input selection
- Return selected value

Instructions

To select all field, put “X” in the desired blank-fled.

Step	Step description	System response/ Notes
I	Input in blank field	Keep information in database

Application Interface



Glue Code Project Effort Multiplier Attributes						
AAREN - Application Architectural Engineering					EXPLANATION	
	Very Low	Low	Nominal	High		Very High
Unknown	No architecture validation done.	Paper analysis performed.	Peer reviews of architectural design (including interface definitions).	Prototyping/ demos of the architecture performed.		Simulations of the architecture created.
	4.00	3.00	2.00	1.00		0.00
			x			2.00
Rationale for rating:						

P1.4 Schedule Compression

Description

This sheet is the input value for schedule compression used for all project

Features

Section 1: Project Header

- Display Project Information header

Section 2: Schedule Compression

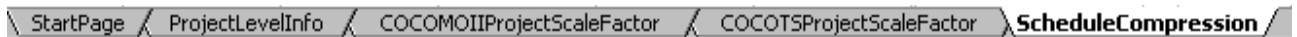
- Display Input selection
- Return selected value

Instructions

To select all field, put “X” in the desired blank-fled.

Step	Step description	System response/ Notes
I	Input in blank field	Keep information in database

Application Interface



Schedule Compression						EXPLANATION
SCED - Required development Schedule						
SCED - Base Rating						
Very Low	Low	Nominal	High	Very High		
75%	85%	100%	130%	160%		
1.43	1.14	1.00	1.00	1.00		
	x					1.14
Percentage Incremental						EXPLANATION
0%	25%	50%	75%			
		x				50%
						1.07
Rationale for rating					SCED%	93%
<input type="text"/>						

P2 COCOMOII Main Page

Description

This sheet is the main page for COCOMOII Modules. It consists of 3 main sections

Features

Section 1: *Project header*

Section 2: *Modules used for COCOMOII*

- Selection for up to 10 COCOMOII module for your project
- Display/Hide input form/Output form

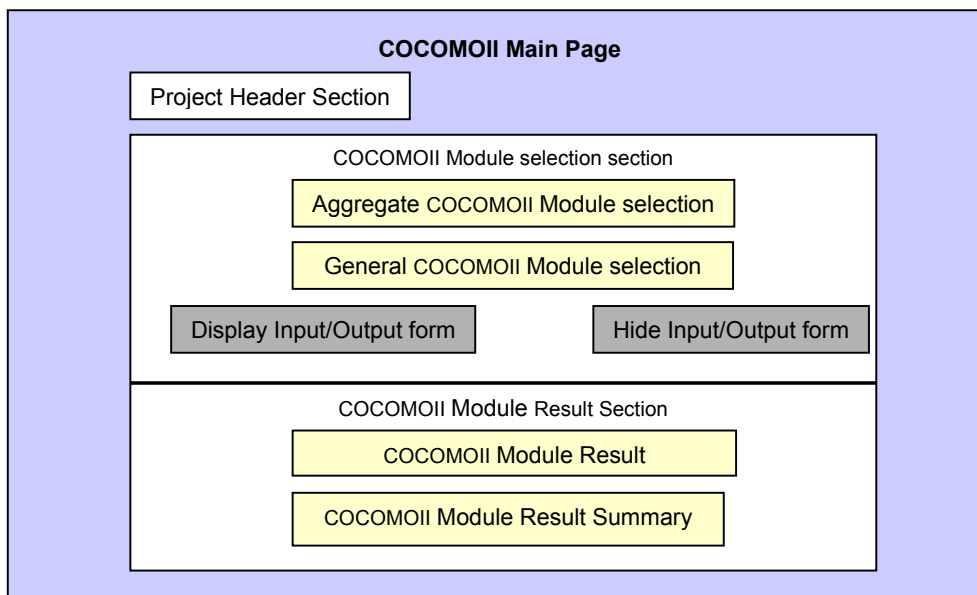
Section 3: *Result of COCOMOII*

- Link all result of COCOMOII of each Module
- Return all information after input all input form

Instruction

You have to select classes of COCOMOII Module used in your project, and then after you select display input form; it will pop-up input/output form for each class. You can also add more classes in the blank field. The application will pop up new module as you input

Page Navigation



Application Interface



Section1: Project Header

Section2: COCOMOII Module selection section

Step	Step description	System response/ Notes
I	<Option1> Click [C00] in case required only 1 aggregate COCOMOII Module	Disabled all detailed class
II	<Option 2> Click Modules that exist in your project, Input Module Name in blank field.	Disabled Aggregate class
III	Select “Display” Button	Display input form/Output form for each selected class
IV	<Option> Select “Hide” Button	Hide all input form/Output forms \

COCOMOII Module

Project Title : Project ID No.

Date Prepared: Rev No.

Originators

Modules of COCOMOII used

[C00] Aggregate COCOMOII Module

<input type="checkbox"/> [C01] 1	<input type="checkbox"/> [C01OP] Output 1
<input type="checkbox"/> [C02] 2	<input type="checkbox"/> [C02OP] Output 2
<input type="checkbox"/> [C03] 3	<input type="checkbox"/> [C03OP] Output 3
<input type="checkbox"/> [C04] 4	<input type="checkbox"/> [C04OP] Output 4
<input type="checkbox"/> [C05] 5	<input type="checkbox"/> [C05OP] Output 5
<input type="checkbox"/> [C06] 6	<input type="checkbox"/> [C06OP] Output 6
<input type="checkbox"/> [C07] 7	<input type="checkbox"/> [C07OP] Output 7
<input type="checkbox"/> [C08] 8	<input type="checkbox"/> [C08OP] Output 8
<input type="checkbox"/> [C09] 9	<input type="checkbox"/> [C09OP] Output 9
<input type="checkbox"/> [C10] 10	<input type="checkbox"/> [C10OP] Output 10

Section3: COCOMOII Module Result section

Result of COCOMOII								
Module	EM (PERSON - MONTHS)	EM _{NS} (PERSON - MONTHS)	PM _{auto} (PERSON - MONTHS)	PM (PERSON - MONTHS)	PM _{NS} (PERSON - MONTHS)	TDEV (MONTHS)	Staff (PERSONS)	Cost (Dollars)
[C00] Aggregate COCOMOII Module	0.81	0.76	208.333	211.124	210.941	18.517	11.402	844.495
[C01] 1								
[C02] 2								
[C03] 3								
[C04] 4								
[C05] 5								
[C06] 6								
[C07] 7								
[C08] 8								
[C09] 9								
[C10] 10								
			Total PM_{auto} (PERSON - MONTHS)	Total PM (PERSON - MONTHS)	Total PM_{NS} (PERSON - MONTHS)	Total TDEV (MONTHS)	Total Staff (Persons)	Total Cost (Dollar)
			208.3	211.1	210.9	18.5	11.4	844.49

P2.1 COCOMOII Input form

Description

COCOMOII will estimate value for each module in your project after input all factors

Features

Composed with 5 main input sections

Section 1: *Project Header*

Section 2: *Sect.2.1.1 Product factor*

- **T2.1.1.1. Requirement Software Reliability--RELY**
- **T2.1.1.2 Data Size--DATA**
- **T2.1.1.3 Complexity--CPLX**
 - S2.1.3.1 Control Operation
 - S2.1.3.2 Computation Operation
 - S2.1.3.3 Device Independent
 - S2.1.3.4 Data Management
 - S2.1.3.5 User Interface Mgmt
- **T2.1.1.4 Required Usability--RUSE**
- **T2.1.1.5 Documentation Match to life Cycle—DOCU**

Section 3: *Sect.2.1.2 Personal factor*

- **T2.1.2.1. Personal Factor--PCON**
- **T2.1.2.2 Analyst Capability--ACAP**
- **T2.1.2.3 Programmer Capability--PCAP**
- **T2.1.2.4 Application Experience--AEXP**
- **T2.1.2.5 Platform Experience--PEXP**
- **T2.1.2.6 Language and Tool Experience—LEXP**

Section 4: *Sect.2.1.3 Platform factor*

- **T2.1.3.1. Execution Time Constraint--TIME**
- **T2.1.3.2. Main Storage Constraint--STOR**
- **T2.1.3.3. Platform Volatility—PVOL**

Section 5: *Sect.2.1.4 Project factor*

- **T2.1.4.1. Use of the Software Tool--TOOL**
- **T2.1.4.2. Multisite Development--SITE**

Instructions

You have to input product factor, platform factor, project factor, and personal factor sheets. Then, application will calibrate COCOMOII output in main page.

There are sub-tables for each section. Select your project characteristics in the sub-tables; it will appear result for main table. You can change value or re-select value in main input section.

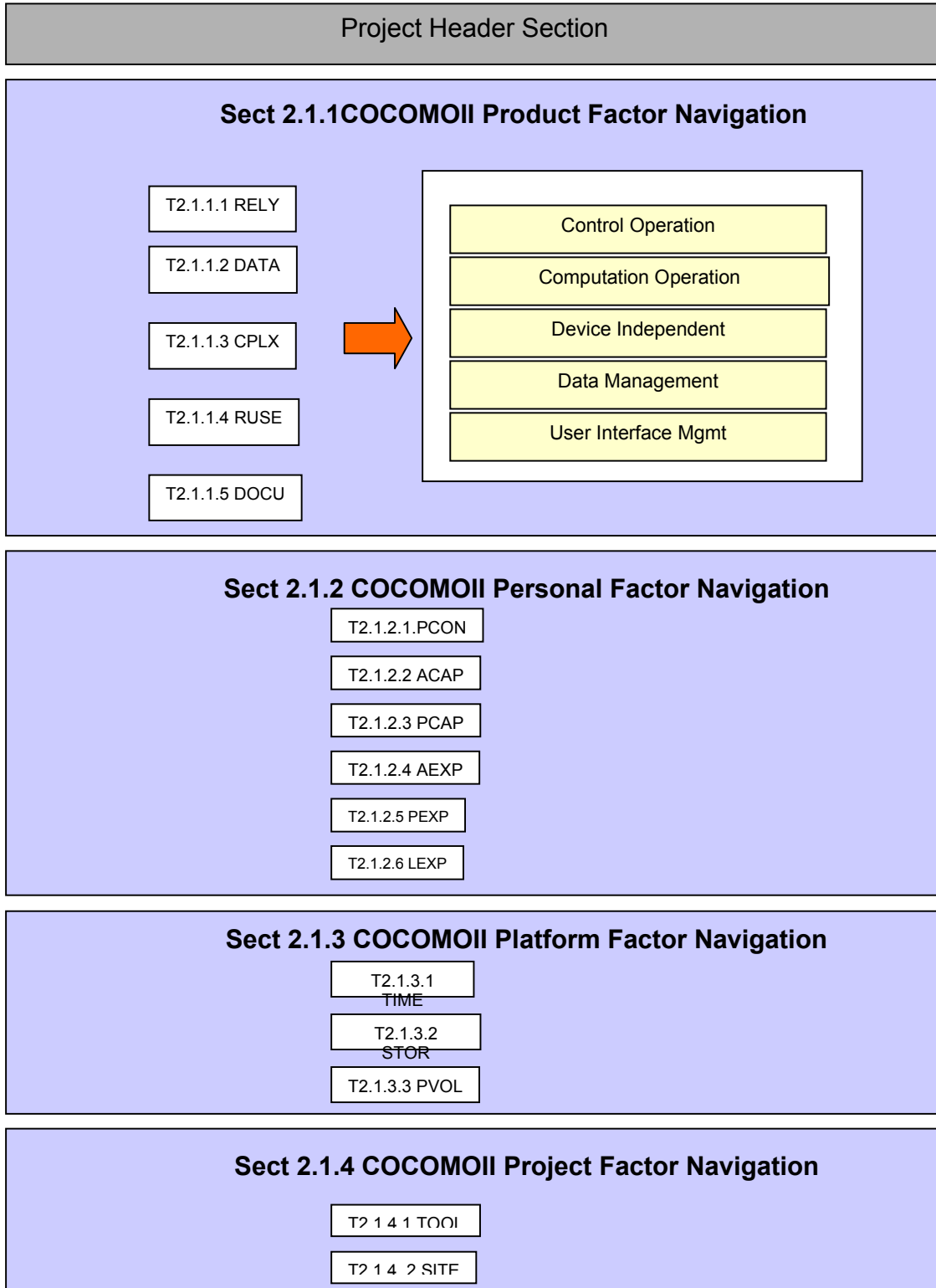
To select all field, put “X” in the desired blank-fled

Application Interface



P2.1 Page Navigation

* Remark This page is too large to show in one page, so that the navigation page will depict the overall sheet .



Section 2: Product Scale Factors Section

T2.1.1.1. Requirement Software Reliability--RELY

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of automatic selected field in Output Box

Product Factor						EXPLANATION
Place "x" on desired values.						
RELY - Required Software Reliability						<div style="border: 1px solid black; padding: 5px;"> This is the measure of the extent to which the software must perform its intended function over a period of time. </div>
Very Low	Low	Nominal	High	Very High	Extra High	
slight inconvenience	low, easily recoverable losses	Moderate, easily recover-able losses	high financial losses	risk to human life		
0.75	0.88	1.00	1.15	1.39		
		x				1.00
Rationale for rating						

T2.1.1.2 Data Size--DATA

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

DATA - Data Size						EXPLANATION
Very Low	Low	Nominal	High	Very High	Extra High	
	DB bytes/Pgm SLOC < 10	10 <= D/P < 100	100 <= D/P < 1000	D/P >= 1000		
	0.93	1.00	1.09	1.19		
				x		1.19
Rationale for rating						

T.2.1.1.3 CPLX Process

Step	Step description	System response/ Notes
1	User Go To S.2.1.1.3 CPLX table	
2	Scroll Right to sub table	
3	Enter "X" in selected rank for S.2.1.1.3.1	Show value of selected field in correspondent point
4	Enter "X" in selected rank for S.2.1.1.3.2	Show value of selected field in correspondent point
5	Enter "X" in selected rank for S.2.1.1.3.3	Show value of selected field in correspondent point
6	Enter "X" in selected rank for S.2.1.1.3.4	Show value of selected field in correspondent point
7	Enter "X" in selected rank for S.2.1.1.3.5	Show value of selected field in correspondent point
8	Scroll Back to Table S.2.1.1.3	Show "Total Point" of all selected fields
9	Scroll Back to Table S.2.1.1.3	Show the selected Value "x" correspondent to Total Point Score
10		Show value of selected field in Output Box
11	[Option] Change "x" in Table S.2.1.1.3	Show value of selected field in correspondent point

T.2.1.1.3 CPLX Table

Please fill in the 5 tables to the right. The Total Point Score is automatically selected						EXPLANATION
CPLX						
Very Low	Low	Nominal	High	Very High	Extra High	<p>This measure attempts to capture the affect large data requirements have on product development e.g. testing. The rating is determined by calculating D/P, where D is the number of bytes of data and P is the number of SLOCs.</p> <p>structured programming operators: Dos,CASEs, IF THE ELSEs Simple modt compisition via procedure calls o simple scripts</p> <p>1.00</p> <p>Correspon</p>
Point total between	Point total between	Point total between	Point total between	Point total between	Point total between	
5 and 8	9 and 12	13 and 17	18 and 22	23 and 26	27 and 30	
0.75	0.88	1.00	1.15	1.30	1.66	
						1.00
Rationale for rating						

S.2.1.1.3.1 Sub-Table of CPLX

Features to evaluate CPLX

Control operation					
Very Low	Low	Nominal	High	Very High	Extra High
Straight-line codewith a few non-nested structured programming operators: Dos,CASEs, IF THEN ELSEs Simple module compisition via procedure calls or simple scripts	Straight forward nesting of structured programming operators. Mostly simple predicates.	Mostly simple nesting, some intermodule control. Decision tables Simple callbacks or message passing, including middleware-supported distributed	Highly nested structured programming structured operators with many compound predicates. Queue and stack control. Homogeneous distributed processing. Single processor soft real-time control.	Reentrance and recursive coding Fixed priority interrupt handling. Task synchronization, complex callbacks, heterogeneous dirtributed processing. Single-processor hard real-time control	Multiple resource scheffuling with dynamically changing priorities. Microcode-level-control. Distributed hard real-
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

Total Point Score = 15.00

S.2.1.1.3.2 Sub-Table of CPLX

Computational Operation					
Very Low	Low	Nominal	High	Very High	Extra High
Evaluation of simple processing: e.g. A = B+C*(D-E)	Evaluation of moderate-level processing: e.g.D=SQRT(B**2-4.*A*C)	Use of standard math and statistical routines. Basic matrix/vector operations	Basic numerical analysis: multivariate interpolation ordinary differential equations. Basic truncation, roundoff concerns	Difficult but structured near-singular analysis: near-singular matrix equations, partial differential equations. Simple	Difficult but unstructured numerical analysis: highly accurate analysis noisy, stocharastic data, Complex parallelization
1.00	2.00	3.00	4.00	Fifficult bu	6.00
		x			

Corresponding Points = 3.00

S.2.1.1.3.3 Sub-Table of CPLX

Device dependent Operation					
Very Low	Low	Nominal	High	Very High	Extra High
Simple read, write statements with Simple formats	No cognization needed of particular processor or I/O device characteristics. I/O done at GET/PUT level	I/O processing includes device selection, status checking and error processing.	Operations at Physical I/O level(Physical storageaddress translations; seeks, reads, etc.) Optimized I/O overlap.	Routines for interruptdiagnosis, servicing, masking. Commu-nication line handlingPerformanc e-intensive embeddedsystems.	Device timing-dependent coding,micro-programmedoper ations. Performance-criticalembedded systems.
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S.2.1.1.3.4 Sub-Table of CPLX

Device dependent Operation					
Very Low	Low	Nominal	High	Very High	Extra High
Simple read, write statements with Simple formats	No cognization needed of particular processor or I/O device characteristics. I/O done at GET/PUT level	I/O processing includes device selection, status checking and error processing.	Operations at Physical I/O level(Physical storageaddress translations; seeks, reads, etc.) Optimized I/O overlap.	Routines for interruptdiagnosis, servicing, masking. Commu-nication line handlingPerformanc e-intensive embeddedsystems.	Device timing-dependent coding,micro-programmedoper ations. Performance-criticalembedded systems.
1.00	2.00	3.00	4.00	5.00	6.00
		x			

Corresponding Points = 3.00

S.2.1.1.3.5 Sub-Table of CPLX

User Interface Management Operation					
Very Low	Low	Nominal	High	Very High	Extra High
Simple input forms, report generators.	Use of simple graphic user interface (GUI) builders. files. Moderately complex COTS-DB queries, updates.	Simple use of widget set edits. Complex COTS-DB queries, updates.	Widget set development and extension. Simple voice I/O, multimedia restructuring.	Moderately complex 2D/3D, dynamic graphics, multimedia.	Complex multimedia, virtual reality data management.
1.00	2.00	3.00	4.00	5.00	6.00
		X			

Corresponding Points = 3.00

S2.1.1.4 Required Usability--RUSE

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

RUSE - Required Usability						EXPLANATION	This cost driver accounts for the additional effort needed to construct components intended for reuse on the current or future projects.
Very Low	Low	Nominal	High	Very High	Extra High		
	None	across project	across program	across product line	across multiple product line		
	0.91	1.00	1.14	1.29	1.49		
				x		1.29	
Rationale for rating							

S2.1.1.5 Documentation Match to life Cycle—DOCU

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

DOCU - Documentation match to life-cycle needs					EXPLANATION	This captures the suitability of the project's documentation to its life-cycle needs.
Very Low	Low	Nominal	High	Very High		
Many life-cycle needs not covered	Some life-cycle needs not covered	Right-sized to life-cycle needs	Excessive for life-cycle needs	Very excessive life-cycle needs		
1.22	1.10	1.00	0.89	0.81		
				x		0.81
Rationale for rating						

Section 2: Personal factor Section

T2.1.2.1. Personal Factor--PCON

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

Personal Factor					
Place "x" on desired values.					
PCON - Personnel Continuity					
Low	Low	Nominal	High	Very High	Extra High
48%/year	24%/year	12%/year	6%/year	3%/year	
1.24	1.10	1.00	0.92	0.84	
				x	
Rationale for rating					

EXPLANATION
The rating scale for PCON is in terms of the project's annual personnel turnover.

0.84

T.1.2.2 Analyst Capability—ACAP

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

ACAP - Analyst Capability					
Very Low	Low	Nominal	High	Very High	Extra High
15th percentile	35th percentile	55th percentile	75th percentile	90th percentile	
1.50	1.22	1.00	0.83	0.67	
				x	
Rationale for rating					

EXPLANATION
Analysts are personnel that work on requirements, high level design and detailed design.

0.67

T2.1.2.3 Programmer Capability--PCAP

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

PCAP - Programmer Capability					
Very Low	Low	Nominal	High	Very High	Extra High
15th percentile	35th percentile	55th percentile	75th percentile	90th percentile	
1.50	1.22	1.00	0.83	0.67	
				x	
Rationale for rating					

EXPLANATION
Evaluation should be based on the capability of the programmers as a team rather than as individuals. Major factors which should be considered in the rating are ability, efficiency and thoroughness, and the ability to communicate and cooperate.

0.67

T2.1.2.4 Application Experience--AEXP

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

AEXP - Applications Experience						EXPLANATION
Very Low	Low	Nominal	High	Very High	Extra High	Analysts are personnel that work on requirements, high level design and detailed design.
<=2 months	6 months	1 year	3 years	6 years		
1.22	1.10	1.00	0.89	0.81		
				x		0.81
Rationale for rating						

T2.1.2.5 Platform Experience--PEXP

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

PEXP - Platform Experience						EXPLANATION
Very Low	Low	Nominal	High	Very High	Extra High	The Post-Architecture model broadens the productivity influence of PEXP, recognizing the importance of understanding the use of more powerful platforms, including more graphic user interface, database, networking, and distributed middleware capabilities.
<=2 months	6 months	1 year	3 years	6 years		
1.25	1.12	1.00	0.88	0.81		
				x		0.81
Rationale for rating						

T2.1.2.6 Language and Tool Experience--LTEX

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

LTEX - Language and Tool Experience						EXPLANATION
Very Low	Low	Nominal	High	Very High	Extra High	This is a measure of the level of programming language and software tool experience of the project team developing the software system or subsystem.
<=2 months	6 months	1 year	3 years	6 years		
1.22	1.10	1.00	0.91	0.84		
				x		0.84
Rationale for rating						

Section 3: Platform factor Section

T2.1.3.1. Execution Time Constraint—TIME

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

Platform factor						EXPLANATION
Place "x" on desired values.						<p>This is a measure of the execution time constraint imposed upon a software</p>
TIME - Execution Time Constraint						
Very Low	Low	Nominal	High	Very High	Extra High	
		<=50%	70%	85%	95%	
		use of available executive time	use of available executive time	use of available executive time	use of available executive time	
		0.87	1.00	1.15	1.30	
					x	1.30
Rationale for rating						

T2.1.3.2. Main Storage Constraint--STOR

STOR - Main Storage Constraint						EXPLANATION
		<=50%	70%	85%	95%	<p>This rating represents the degree of main storage constraint imposed on a software system or subsystem.</p>
Very Low	Low	Nominal	High	Very High	Extra High	
		use of available storage time	use of available storage time	use of available storage time	use of available storage time	
		1.00	1.06	1.21	1.57	
				x		1.21
Rationale for rating						

T2.1.3.3. Platform Volatility—PVOL

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

PVOL - Platform Volatility						EXPLANATION
		Major change every 6 months, minor change every 2 month	Major change every 2 months, minor change every 1 week	Major change every 2 weeks, minor change every 1 day		<p>Platform is used here to mean the complex of hardware and software (OS, DBMS, etc.) the software product calls on to perform its tasks.</p>
Very Low	Low	Nominal	High	Very High	Extra High	
	Major change every 12 months, minor change every 1 month	Major change every 6 months, minor change every 2 month	Major change every 2 months, minor change every 1 week	Major change every 2 weeks, minor change every 1 day		
	0.67	1.00	1.15	1.30		
				x		1.30
Rationale for rating						

Section 4: Project factor

T2.1.4.1. Use of the Software Tool—TOOL

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

Project factor					
Place "x" on desired values.					
TOOL - Use of Software Tools					
Very Low	Low	Nominal	High	Very High	Extra High
edit, code, debug	simple, frontend, backend CASE little integration	basic lifecycle tools, moderately integrated	strong, mature life-cycle tools, moderately integrated	strong, mature, proactive life-cycle integrated with process, methods, reuse	
1.24	1.12	1.00	0.86	0.72	
				x	
Rationale for rating					

EXPLANATION

The tool rating ranges from simple edit and code, very low, to integrated lifecycle management tools, very high.

0.72

T2.1.4.2. Multisite Development--SITE

Step	Step description	System response/ Notes
1	Enter "X" in selected rank	Show value of selected field in Output Box

SITE - Multisite Development					
Very Low	Low	Nominal	High	Very High	Extra High
some phone mail	individual phone FAX	Narrowband email	Wideband electronic communication	Wideband electronic communication occasional video conference	interactive multimedia
1.25	1.10	1.00	0.92	0.84	0.78
				x	
Rationale for rating					

EXPLANATION

Given the increasing frequency of multisite developments, and indications that multisite development effects are significant, the SITE co has been added in COCOMO II. Determining its co driver rating involves the assessment and aver two factors: site collocation (from fully collocate international distribution) and communication (from surface mail and some phone access to fu interactive multimedia)

0.84

P2.2 COCOMOII Output form

Description

It will show up the accuracy result of COCOMOII after complete input all factors' forms.

Features

Section1: *Project Header Section*

Section2: *Scale Factors Section*

- Link to Project Scale factors value to get value for calculation COCOMOII from Overall project.

Section3: *EM Section*

- Link to Project Scale factors value to get value for calculation COCOMOII from Input form.

Section 4: *Calculation section*

- Return all COCOMOII calculation results

- COCOMOII will estimate value for your project after input all factors

Instructions

You have to input product factor, platform factor, project factor, and personal factor sheets. Then, application will calibrate COCOMOII output in main page.

Step	Step description	System response/ Notes
1	After Input all Factor Sheets	
2	Input Information in Calculation section	Calibrate Output

Application Interface

StartPage / COCOMOII Mainpage / C00 / C00OP

Section 1 Project Header

C O C O M O I I	
Project Title :	<input type="text" value="Test"/> Project ID : <input type="text" value="1"/>
Date Prepared :	<input type="text" value="20-Nov-2000"/> Rev No. : <input type="text" value="0"/>
Originators :	<input type="text" value="May"/>
[C00] COCOMO II MODULE Aggregate COCOMOII Module	

Section 2: Scale Factor Section

Scale Factor (SF) Section				
PREC	FLEX	RESL	TEAM	PMAT
4.96	3.04	5.65	3.29	1.56
ΣSF (Summation of Scale Factor) =				18.5

Section 3: EM Section

EM Section					
Product Factors					
RELY	DATA	CPLX	RUSE	DOCU	
1	1.28	1	1.15	1.23	
Platform Factors					
TIME	STOR	PVOL			
1.63	1.17	1.3			
Personnel Factors					
PCON	ACAP	PCAP	APEX	PLEX	LTEX
0.81	0.71	0.76	0.81	0.85	0.84
Project Factors					
TOOL	SITE				
0.78	0.86				

Section 4: Calculation Section

Calculation Section			
INPUT			
	Value overridable in colored field		
DM (% Design Modified)	<input type="text" value="100"/>	%	
CM (% Code Modified)	<input type="text" value="100"/>	%	
IM (% of Integration Required for the Adapted Software)	<input type="text" value="100"/>	%	
AAF = ((0.4 x DM) +(0.3 x CM) +(0.3 x IM)) (Adaptation Adjustment Factor)	100	%	
AA (% Assessment and Assimilation)	<input type="text" value="4"/>	%	
SU (% Software Understanding)	<input type="text" value="30"/>	%	
UNFM (Programmer Unfamiliarity with Software)	<input type="text" value="0.4"/>		
AAM = --> AAF <= 50 ; (AA + AAF x (1 +[0.02 x SU x UNFM]))/100 --> AAF > 50 ; (AA + AAF + [SU x UNFM])/100 (Adaptation Adjustment Modifier)	1.160	%	
Adapted KSLOC	<input type="text" value="500"/>	KSLOC	
AT (% of the Adapted KSLOC that is re-engineered by automatic translation)	<input type="text" value="100"/>	%	
Equivalent KSLOC = (Adapted KSLOC x (1-(AT/100)) x AAM)	0.000	KSLOC	
REVL (% rework in the system independent of COTS effects due to requirements evolution)	<input type="text" value="15"/>	%	<input type="text" value="15"/>
New KSLOC	<input type="text" value="1"/>	KSLOC	(value from C.O.C.O.T.S Model)
SIZE = ((1+ (REVL/100)) x (NEW KSLOC + Equivalent KSLOC))	1.150	KSLOC	
ATPROD (Automatic Translation Productivity)	<input type="text" value="2.4"/>	KSLOC/PM	
Effort Multiplicative and Exponential Constants			
A	<input type="text" value="2.94"/>		
B	<input type="text" value="0.91"/>		
E = (B +0.01x(PREC+FLEX+RESL+TEAM+PMAT))	1.095		
Schedule Multiplicative and Exponential Constants			
C	<input type="text" value="3.67"/>		
D	<input type="text" value="0.28"/>		
F = (D +0.2 x (E - B))	0.317		

P3 COCOTS

Description

After selected display COCOTS, the application will display all COCOTS sheets

Features

Composed with 5 main input sections

- **COCOTS Assessment**
- **COCOTS Tailoring**
- **Glue Code Information**
- **COCOTS Glue Code**
- **System Volatility**

Application Interface



P3.1 COCOTS Assessment Page

Description

This sheet is the main page for COCOTS Assessment sub model.

Features

Section 1: *Project header*

Section 2: *COTS Class Assessment selection section*

- Selection for 22 Standard COTS classes and 6 additional classes
- Display/Hide input form

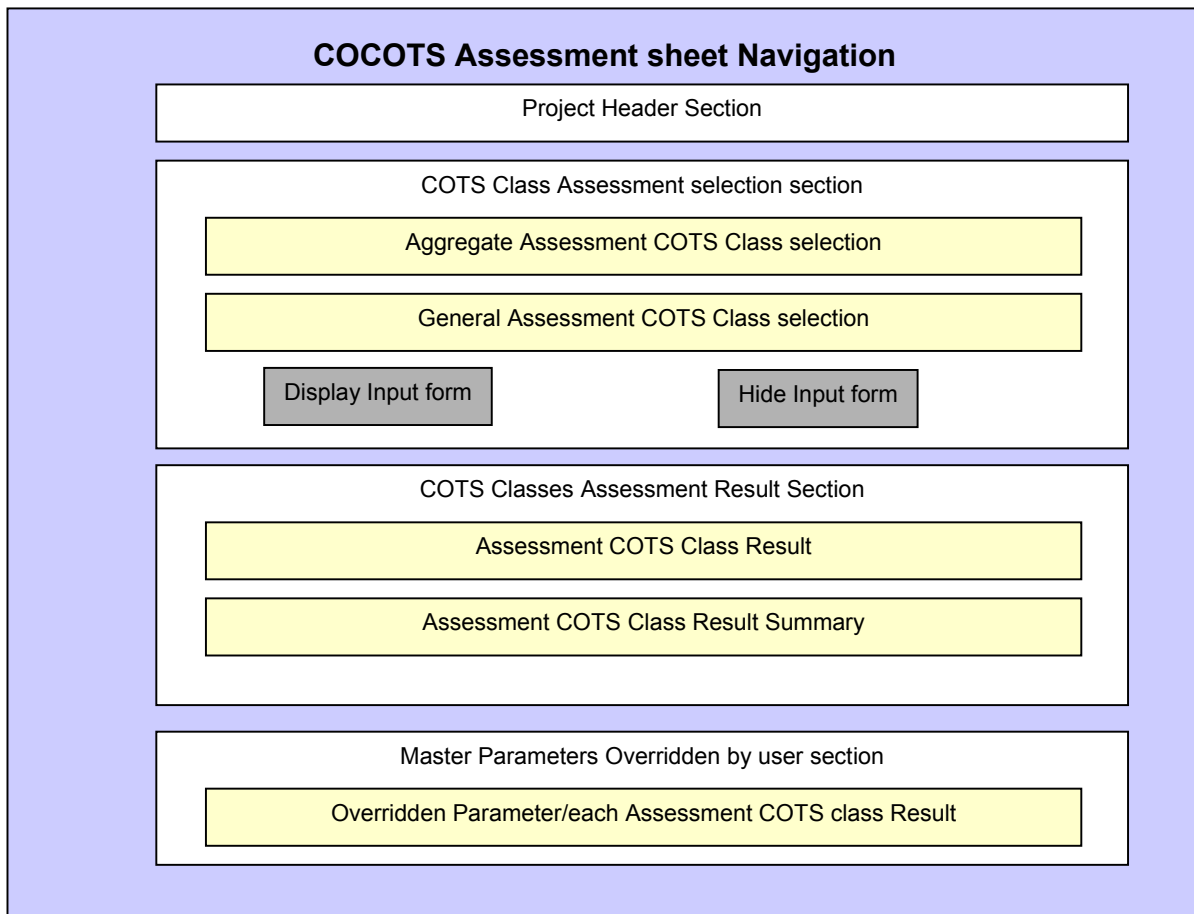
Section 3: *COTS Classes Assessment Result Section*

- Link all result of COTS of each class

Instruction

You have to select classes of COTS product used in your project, and then after you select display input form, it will pop-up input form for each class. You can also add more classes in the blank field. The application will pop up new class as you input

Page Navigation



Application Interface

StartPage / **COCOTSAssessment** / COCOTSTailoring / GlueCodeInfo / COCOTSGlueCode / COCOTSSystemVolatility

Section1: Project Header

Section2: COTS Class Assessment selection section

Step	Step description	System response/ Notes
1	<Option1> Click [A00] in case required only 1 aggregate COTS class	Disabled all detailed class
2	<Option 2> Click classes that exist in your project	Disabled Aggregate class
3	Select "Display" Button	Display input form/each selected class

COCOTS	
Project Title :	Test
Date Prepared:	4-Mar-00
Originators	May
Project ID No.	1
Rev No.	0
Classes of COTS Product Used	
<input checked="" type="checkbox"/> [A00] Aggregate Assessment Calculations	
<input type="checkbox"/> [A01] Back office retail <input type="checkbox"/> [A02] Communication protocols/packages <input type="checkbox"/> [A03] Compilers <input type="checkbox"/> [A04] Configuration mgmt/build tools <input type="checkbox"/> [A05] Data conversion packages <input type="checkbox"/> [A06] Databases <input type="checkbox"/> [A07] Device drivers <input type="checkbox"/> [A08] Disk arrays <input type="checkbox"/> [A09] Emulators <input type="checkbox"/> [A10] Engineering tools (req mgmt, design) <input type="checkbox"/> [A11] Graphic information system <input type="checkbox"/> [A12] GUIs/GUI builders <input type="checkbox"/> [A13] Middleware <input type="checkbox"/> [A14] Network managers	<input type="checkbox"/> [A15] Operating systems <input type="checkbox"/> [A16] Problem mgmt <input type="checkbox"/> [A17] Report generators <input type="checkbox"/> [A18] Software process tools <input type="checkbox"/> [A19] Telecommunication & infrastructure <input type="checkbox"/> [A20] Telemetry Analysis <input type="checkbox"/> [A21] Telemetry processing <input type="checkbox"/> [A22] Word processing <input type="checkbox"/> [A23] <input type="checkbox"/> [A24] <input type="checkbox"/> [A25] <input type="checkbox"/> [A26] <input type="checkbox"/> [A27] <input type="checkbox"/> [A28]
<input type="button" value="DISPLAY INPUT FORM FOR EACH CLASS"/> <input type="button" value="HIDE ALL INPUT FORMS"/>	

Section 3: COTS Classes Assessment Result Section

- Link all result of COTS of each class

Instruction

This section will show up the result of all COTS classes that you already finished input information in input form. The accuracy information will show when you completed all selected classes' input forms.

Result of COCOTS Assessment					
Class	Total Initial Filtering Effort	Total Detailed Assessment Effort	Class	Total Initial Filtering Effort	Total Detailed Assessment Effort
[A00] Aggregate Tailoring Calculations	5.0	0.0			
[A01] Back office retail			[A15] Operating systems		
[A02] Communication protocols/packages			[A16] Problem mgmt		
[A03] Compilers			[A17] Report generators		
[A04] Configuration mgmt/build tools			[A18] Software process tools		
[A05] Data conversion packages			[A19] Telecommunication & infrastructure		
[A06] Databases			[A20] Telemetry Analysis		
[A07] Device drivers			[A21] Telemetry processing		
[A08] Disk arrays			[A22] Word processing		
[A09] Emulators			[A23]		
[A10] Engineering tools (req mgmt, design)			[A24]		
[A11] Graphic information system			[A25]		
[A12] GUIs/GUI builders			[A26]		
[A13] Middleware			[A27]		
[A14] Network managers			[A28]		
Σ Initial Filtering Effort = 5.0 Σ Detailed Assessment Effort = 0.0 Total COCOTS Assessment Effort = 5.0				person-months	

Section 4: Master Parameters Overridden by user section

- Link all overridden parameters of COTS of each class

Instruction

This section will show up the result of all COTS classes that you already finished input information in input form. The accuracy information will show when you completed all selected classes' input forms.

Master Parameter Defaults Overridden by User					
Class	Initial Filtering Effort	Detailed Assessment Effort	Class	Initial Filtering Effort	Detailed Assessment Effort
[A00] Aggregate Assessment Calculations					
[A01] Generic Component			[A15] Network managers		
[A02] Back office retail			[A16] Operating systems		
[A03] Communication protocols/packages			[A17] Problem mgmt		
[A04] Compilers			[A18] Report generators		
[A05] Configuration mgmt/build tools			[A19] Software process tools		
[A06] Data conversion packages			[A20] Telecommunication & infrastructure		
[A07] Databases			[A21] Telemetry Analysis		
[A08] Device drivers			[A22] Telemetry processing		
[A09] Disk arrays			[A23] Word processing		
[A10] Emulators			[A24]		
[A11] Engineering tools (req mgmt, design)			[A25]		
[A12] Graphic information system			[A26]		
[A13] GUIs/GUI builders			[A27]		
[A14] Middleware			[A28]		

P3.2 COCOTS Tailoring Page

Description

This sheet is the main page for COCOTS Tailoring sub model.

Features

Section 1: *Project header*

Section 2: *COTS Class tailoring selection section*

- Selection for 22 Standard COTS classes and 6 additional classes
- Display/Hide input form

Section 3: *COTS Classes Tailoring Result Section*

- Link all result of COTS of each class

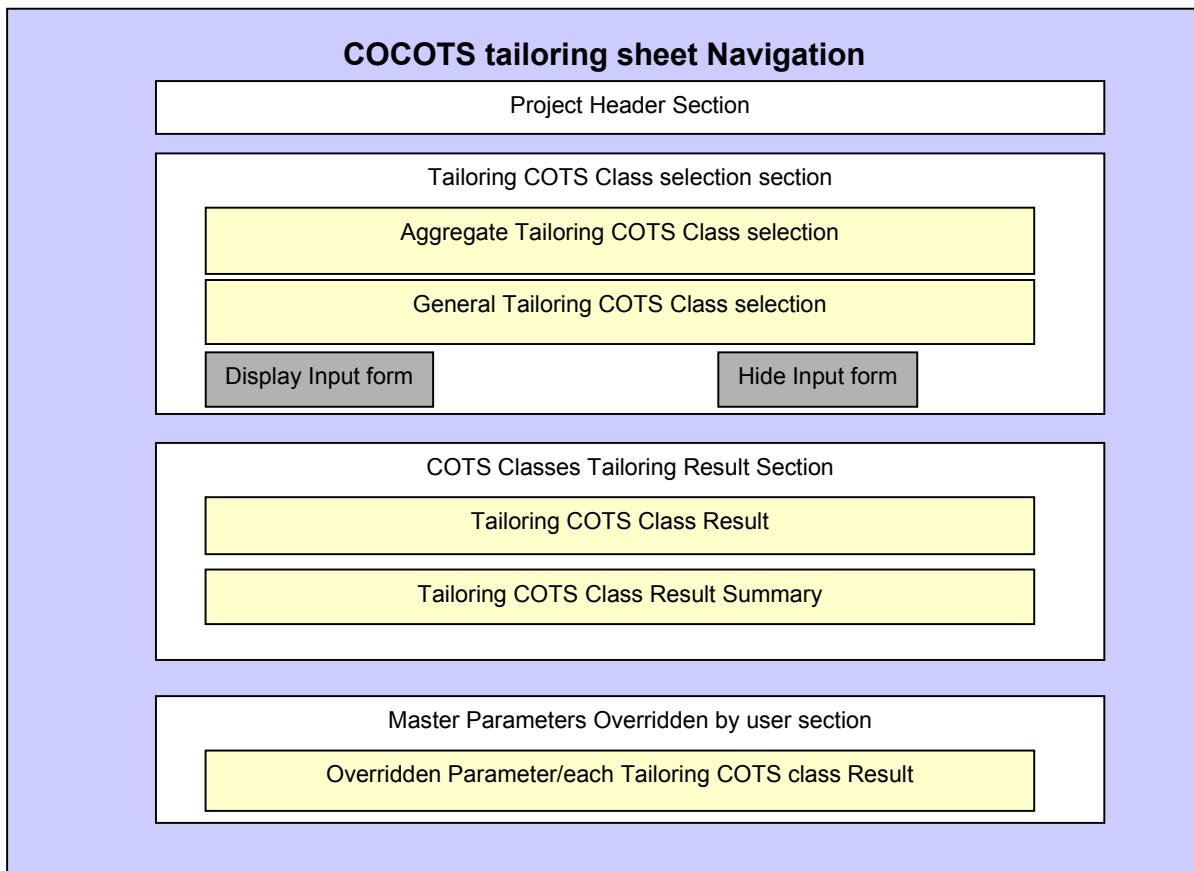
Section 4: *Master Parameters Overridden by user section*

- Link all overridden parameters of COTS of each class

Instruction

You have to select classes of COTS product used in your project, and then after you select display input form, it will pop-up input form for each class. You can also add more classes in the blank field. The application will pop up new class as you input

Page Navigation



Application Interface

StartPage / COCOTSAssessment / **COCOTSTailoring** / GlueCodeInfo / COCOTSGlueCode / COCOTSSystemVolatility /

Section 1: Project Header

C O C O T S			
Project Title :	<input type="text" value="Test"/>	Project ID No.	<input type="text" value="1"/>
Date Prepared:	<input type="text" value="4-Mar-00"/>	Rev No.	<input type="text" value="0"/>
Originators	<input type="text" value="May"/>		

Section 2: COTS Class tailoring selection section

Step	Step description	System response/ Notes
1	<Option 1> Click [A00] in case required only 1 aggregate COTS class	Disabled all detailed class
2	<Option 2> Click classes that exist in your project	Disabled Aggregate class
3	Select "Display" Button	Display input form/each selected class

Classes of COTS Products Used	
<input checked="" type="checkbox"/> [T00] Aggregate Tailoring Calculations <input type="checkbox"/> [T01] Back office retail <input type="checkbox"/> [T02] Communication protocols/packages <input type="checkbox"/> [T03] Compilers <input type="checkbox"/> [T04] Configuration mgmt/build tools <input type="checkbox"/> [T05] Data conversion packages <input type="checkbox"/> [T06] Databases <input type="checkbox"/> [T07] Device drivers <input type="checkbox"/> [T08] Disk arrays <input type="checkbox"/> [T09] Emulators <input type="checkbox"/> [T10] Engineering tools (req mgmt, design) <input type="checkbox"/> [T11] Graphic information system <input type="checkbox"/> [T12] GUIs/GUI builders <input type="checkbox"/> [T13] Middleware <input type="checkbox"/> [T14] Network managers	<input type="checkbox"/> [T15] Operating systems <input type="checkbox"/> [T16] Problem mgmt <input type="checkbox"/> [T17] Report generators <input type="checkbox"/> [T18] Software process tools <input type="checkbox"/> [T19] Telecommunication & infrastructure <input type="checkbox"/> [T20] Telemetry Analysis <input type="checkbox"/> [T21] Telemetry processing <input type="checkbox"/> [T22] Word processing <input type="checkbox"/> [T23] <input type="text"/> <input type="checkbox"/> [T24] <input type="text"/> <input type="checkbox"/> [T25] <input type="text"/> <input type="checkbox"/> [T26] <input type="text"/> <input type="checkbox"/> [T27] <input type="text"/> <input type="checkbox"/> [T28] <input type="text"/>
<input type="button" value="DISPLAY INPUT FORM FOR EACH CLASS"/> <input type="button" value="HIDE ALL INPUT FORMS"/>	

Section 3: COTS Classes Assessment Result Section

- Link all result of COTS of each class

Instruction

This section will show up the result of all COTS classes that you already finished input information in input form. The accuracy information will show when you completed all selected classes' input forms.

Results of COCOTS Tailoring			
Class	Class Tailoring Effort	Class	Class Tailoring Effort
[T00] Aggregate Tailoring Calculations	0.0		
[T01] Back office retail		[T15] Operating systems	
[T02] Communication protocols/packages		[T16] Problem mgmt	
[T03] Compilers		[T17] Report generators	
[T04] Configuration mgmt/build tools		[T18] Software process tools	
[T05] Data conversion pack		[T19] Telecommunication & infrastructure	
[T06] Databases		[T20] Telemetry Analysis	
[T07] Device drivers		[T21] Telemetry processing	
[T08] Disk arrays		[T22] Word processing	
[T09] Emulators		[T23]	
[T10] Engineering tools (req mgmt, design)		[T24]	
[T11] Graphic information system		[T25]	
[T12] GUIs/GUI builders		[T26]	
[T13] Middleware		[T27]	
[T14] Network managers		[T28]	
Project Tailoring Effort (PTE) = \sum [Class Tailoring Effort] = 0.0 person-months			

Section 4: Master Parameters Overridden by user section

- Link all overridden parameters of COTS of each class

Instruction

This section will show up the result of all COTS classes that you already finished input information in input form. The accuracy information will show when you completed all selected classes' input forms.

Parameter Values Changed by User			
Class	Average Tailoring Effort	Class	Average Tailoring Effort
[T00] Aggregate Tailoring Calculations			
[T01] Back office retail		[T15] Operating systems	
[T02] Communication protocols/packages		[T16] Problem mgmt	
[T03] Compilers		[T17] Report generators	
[T04] Configuration mgmt/build tools		[T18] Software process tools	
[T05] Data conversion pack		[T19] Telecommunication & infrastructure	
[T06] Databases		[T20] Telemetry Analysis	
[T07] Device drivers		[T21] Telemetry processing	
[T08] Disk arrays		[T22] Word processing	
[T09] Emulators		[T23]	
[T10] Engineering tools (req mgmt, design)		[T24]	
[T11] Graphic information system		[T25]	
[T12] GUIs/GUI builders		[T26]	
[T13] Middleware		[T27]	
[T14] Network managers		[T28]	

P3.4 COCOTS Glue Code Page

Description

This sheet is the main page for COCOTS Tailoring sub model. It consists of 4 main sections

Features

Section 1: *Project header*

Section 2: *COTS Class Glue Code selection section*

- Selection for 22 Standard COTS classes and 6 additional classes
- Display/Hide input form

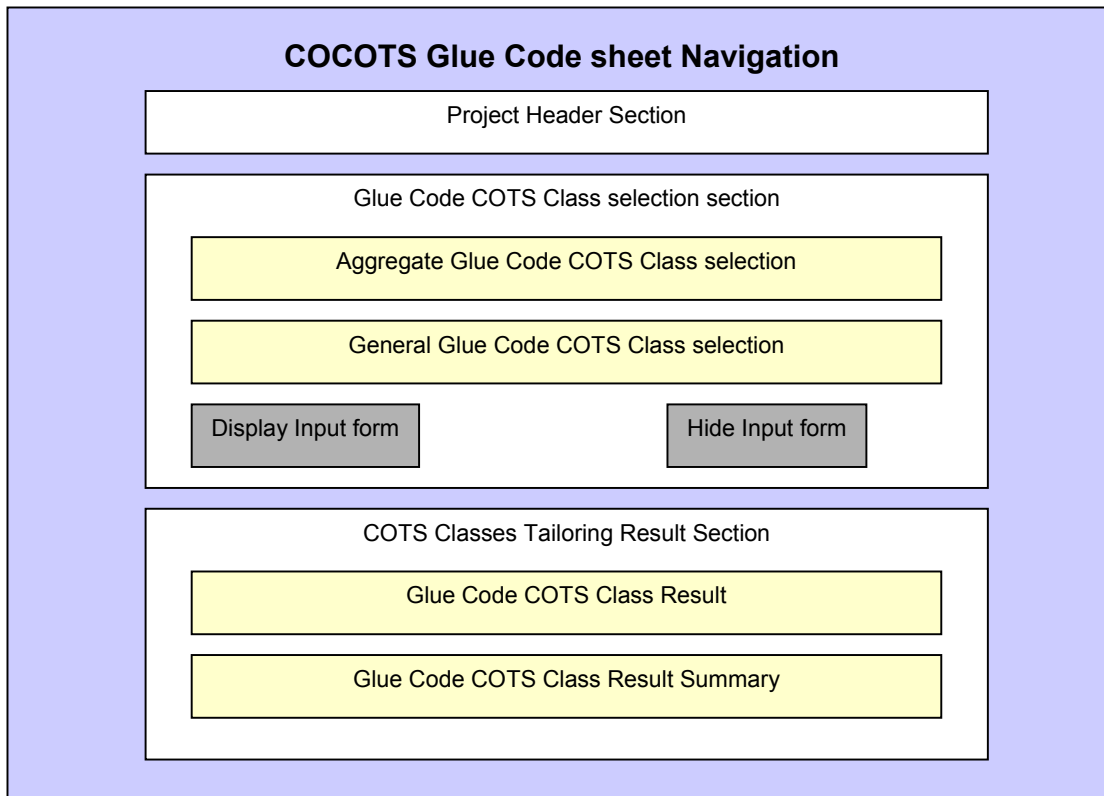
Section 3: *COTS Classes Glue Code Result Section*

- Link all result of COTS of each class

Instruction

You have to select classes of COTS product used in your project, and then after you select display input form, it will pop-up input form for each class. You can also add more classes in the blank field. The application will pop up new class as you input

Page Navigator



Application Interface

StartPage / COCOTSAssessment / COCOTSTailoring / GlueCodeInfo / **COCOTSGlueCode** / COCOTSSystemVolatility

Section 1: Project Header

COCOTS			
Project Title :	<input type="text" value="Test"/>	Project ID No.	<input type="text" value="1"/>
	Date Prepared:		Rev No.
	<input type="text" value="4-Mar-00"/>		<input type="text" value="0"/>
	Originators		<input type="text" value="May"/>

Section 2: COTS Class Glue Code selection section

Step	Step description	System response/ Notes
1	<Option1> Click [A00] in case required only 1 aggregate COTS class	Disabled all detailed class
2	<Option 2> Click classes that exist in your project	Disabled Aggregate class
3	Select "Display" Button	Display input form/each selected class

Classes of COTS Products Used	
<input checked="" type="checkbox"/> [G00] Aggregate Glue Code Calculations	
<input type="checkbox"/> [G01] Back office retail <input type="checkbox"/> [G02] Communication protocols/packages <input type="checkbox"/> [G03] Compilers <input type="checkbox"/> [G04] Configuration mgmt/build tools <input type="checkbox"/> [G05] Data conversion packages <input type="checkbox"/> [G06] Databases <input type="checkbox"/> [G07] Device drivers <input type="checkbox"/> [G08] Disk arrays <input type="checkbox"/> [G09] Emulators <input type="checkbox"/> [G10] Engineering tools (req mgmt, design) <input type="checkbox"/> [G11] Graphic information system <input type="checkbox"/> [G12] GUIs/GUI builders <input type="checkbox"/> [G13] Middleware <input type="checkbox"/> [G14] Network managers	<input type="checkbox"/> [G15] Operating systems <input type="checkbox"/> [G16] Problem mgmt <input type="checkbox"/> [G17] Report generators <input type="checkbox"/> [G18] Software process tools <input type="checkbox"/> [G19] Telecommunication & infrastructure <input type="checkbox"/> [G20] Telemetry Analysis <input type="checkbox"/> [G21] Telemetry processing <input type="checkbox"/> [G22] Word processing <input type="checkbox"/> [G23] <input type="text"/> <input type="checkbox"/> [G24] <input type="text"/> <input type="checkbox"/> [G25] <input type="text"/> <input type="checkbox"/> [G26] <input type="text"/> <input type="checkbox"/> [G27] <input type="text"/> <input type="checkbox"/> [G28] <input type="text"/>
<input type="button" value="DISPLAY INPUT FORMS"/>	<input type="button" value="HIDE ALL INPUT FORMS"/>

Section 3: COTS Classes Glue code Result Section

- Link all result of COTS of each class

Instruction

This section will show up the result of all COTS classes that you already finished input information in input form. The accuracy information will show when you completed all selected classes' input forms.

Results of COCOTS Glue Code			
Class	Class Glue Code Effort	Class	Class Glue Code Effort
[G00] Aggregate Glue Code Calculations	2.0		
[G01] Back office retail		[G15] Operating systems	
[G02] Communication protocols/packages		[G16] Problem mgmt	
[G03] Compilers		[G17] Report generators	
[G04] Configuration mgmt/build tools		[G18] Software process tools	
[G05] Data conversion pack		[G19] Telecommunication & infrastructure	
[G06] Databases		[G20] Telemetry Analysis	
[G07] Device drivers		[G21] Telemetry processing	
[G08] Disk arrays		[G22] Word processing	
[G09] Emulators		[G23]	
[G10] Engineering tools (req mgmt, design)		[G24]	
[G11] Graphic information system		[G25]	
[G12] GUIs/GUI builders		[G26]	
[G13] Middleware		[G27]	
[G14] Network managers		[G28]	
<p align="center"> Project Glue Code Effort (PGCE) = Σ [Class Glue Code Effort] = 2.0 person-months </p>			

P3.5 System Volatility

Description

This sheet is the input form page for each COTS class that is selected in COCOTS Assessment page

Features

Section 1: Overall Project Factors

- Link scale factor value from Overall project—COCOMOII project scale factor sheet.

Section 2: Estimate from COCOMO II

- Link REVL (% rework in the system independent of COTS effects due to requirements) from Overall project--COCOMOII project scale factor sheet.
- Link Application Effort (PM) from Overall project--COCOMOII project scale factor sheet.

Section 3: Factors from COCOTS

- Link SCREVL (% rework in the system due to COTS volatility and COTS requirements change) from Overall project—COCOTS project scale factor sheet.
- Link EAFcots(Effort Adjustment factor; product of effort multipliers)

Section 4: Approximate Model Effort

- Output of calculation Approximate Model Effort

Section 5: Detailed Model Effort

- Output of Detailed Model Effort

Application Interface

StartPage / COCOTSAssessment / COCOTSTailoring / GlueCodeInfo / COCOTSGlueCode \ **COCOTSSystemVolatility** /

Instruction

Step	Step description	System response/ Notes
1	Input all blank field	Calibrate all System Volatility value
2	Review/Override value in Purple field (if necessary)	Recalibrate value in case of changing

COCOTS System Volatility Model			
Project Title :	<input type="text" value="Test"/>	Project ID No.:	<input type="text" value="1"/>
Date Prepared:	<input type="text" value="20-Nov-00"/>	Rev No.:	<input type="text" value="0"/>
Originators	<input type="text" value="May"/>		
Overall Project Factors			
	Value overridable in colored field		
Σ SF: Summation of COCOMO II Project Scale Factors	<input type="text" value="18.50"/>	<input type="text" value="18.50"/>	(value from project scale factor)
Estimate from C O C O M O II			
REVL	<input type="text" value="15"/>	%	<input type="text" value="15"/>
(% rework in the system independent of COTS effects due to requirements evolution)			(value from COCOMO Model)
Application Effort (PM)	<input type="text" value="211.12"/>		<input type="text" value="211.12"/> Person-months
			(value from COCOMO Model)
Factors from C O C O T S			
SCREVOL	<input type="text" value="0.00"/>	%	
(% rework in the system due to COTS volatility and COTS requirements change)			
EAF_{COTS}	<input type="text" value="1.00"/>		(value from Glue Code EAF)
(Effort Adjustment factor; product of effort multipliers)			
Approximate Model			
Volatility Multiplicative Constant V1	<input type="text" value="1.00"/>		<input type="text" value="1.00"/>
(Constant used for calculation of system volatility Effort)			(value from Master Parameter)
Total Effort	0.00		Person-months
$(V1 \times \text{Application Effort} \times [\text{SCREVOL}/100] \times \text{EAF}_{\text{COTS}})$			
Detailed Model			
Volatility Multiplicative Constant V2	<input type="text" value="1.00"/>		<input type="text" value="1.00"/>
(Constant used for calculation of system volatility Effort)			(value from Master Parameter)
Total System Volatility Effort	0.00		Person-months
$(V2 \times \text{Application Effort} \times [(1 + \text{SCREVOL}/(1+\text{REVL}))^{(B+(0.01 \times B))} - 1] \times \text{EAF}_{\text{COTS}})$			

P4 Combined Schedule and Effort Sheet

Description

This sheet is the input form page for each COTS class that is selected in COCOTS Assessment page

Features

Section 1: *Project header*

- Link all information from COCOTS main page

Section 2: *Summary of COCOTS efforts for 4 main sub models*

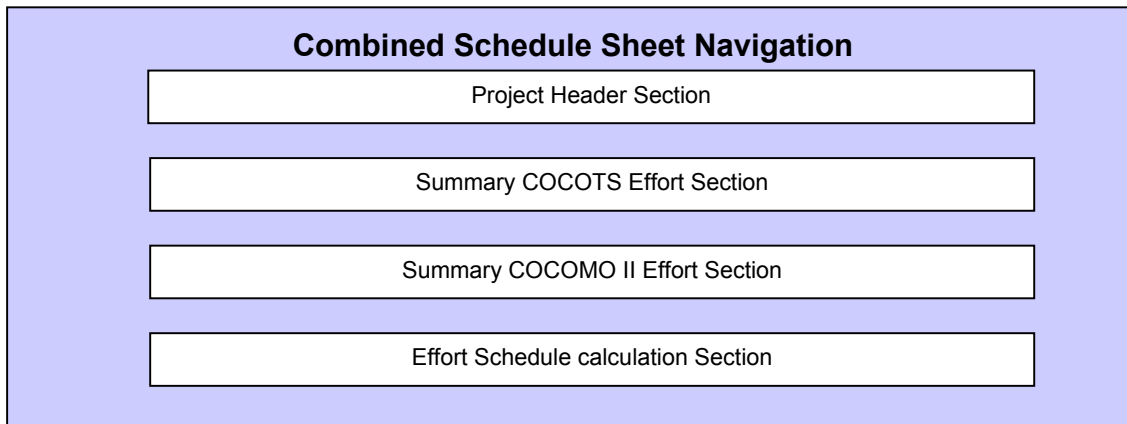
- COCOTS efforts with Override-able field (Purple)

Section 3: *COCOMO II Effort*

- Link to COCOMO Sheet value with Override-able field (Purple)

Section 4: *Effort and Schedule Equations*

- Output of Time in calendar month



Application Interface



PROJECT SCHEDULE		
Project Title :	<input type="text" value="Test"/>	Project ID No. <input type="text" value="1"/>
	Date Prepared: <input type="text" value="20-Nov-00"/>	Rev No. <input type="text" value="0"/>
	Originators <input type="text" value="May"/>	
Summary COCOTS Effort		
Value overridable in colored field		
Total Assessment Effort	<input type="text" value="0.00"/>	Person-months
Total Tailoring Effort	<input type="text" value="0.00"/>	Person-months
Total Glue Code Effort	<input type="text" value="0.00"/>	Person-months
Total System Volatility Effort	<input type="text" value="0.00"/>	Person-months
Total COCOTS Effort	0.00	Person-months
COCOMO II Effort		
ΣSF: Summation of COCOMO II Scale Factors	<input type="text" value="18.50"/>	
Total COCOMO II Effort	211.12	Person-months
Schedule and Effort Equations		
B: The Scale base-component for the effort equation	<input type="text" value="0.91"/>	
C: Coefficient that can be calibrated	<input type="text" value="3.67"/>	
D: Scaling base-exponent that can be calibrated	<input type="text" value="0.28"/>	
E : The scaling exponent for the effort equation (E = B+0.01ΣSF)	<input type="text" value="1.10"/>	
F: Scaling exponent for schedule (F = D + 0.2x(E - B))	<input type="text" value="0.32"/>	
CombinedPM_{NS} : Person Months estimated without the SCED cost driver (Nominal Schedule)	211.12	Person-months
(COCOTMO II Effort + 75% of Total Assessment Effort + 100% of Total Tailoring Effort + 100% of Total Glue Code Effort + 100% of Total System Volatility Effort)		
SCED : Percentage of Required Schedule Compression	93%	
TDEV : Time to Develop in Calendar months	18.52	Months
$\frac{C \times (\text{CombinedPM}_{NS})^F}{100} \times \text{SCED\%}$		

P5. Master Parameters

Description

Master parameters used for all spreadsheet. Advance user can adjust all value but it will result in calibration data

Master Parameters composed of

- COCOTS Master Parameters
- COCOMOII Master Parameters

Reference

1. Software Cost Estimation with COCOMOII, *Barry Boehm, Chirs Abts, A Winsor Brown, Sunita Chulani, Bradford K. Clark, Ellis Horowitz, Ray Madachy, Donald Reifer, Bert Steerc*, 2000
2. Center of Software Engineering Website, Univerity of Southern California, <http://sunset.usc.edu>